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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/032,721	12/27/2001	Yukiko Kubota	010951	6364

23464 7590 01/26/2005

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EXAMINER

BERNATZ, KEVIN M

ART UNIT	PAPER NUMBER
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1773

DATE MAILED: 01/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/032,721

Applicant(s)

KUBOTA ET AL.

Examiner

Kevin M Bernatz

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3,6-8 and 10-30 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-3,6-8,10-12 and 20-30 is/are allowed.
- 6) ☒ Claim(s) 13,14 and 31 is/are rejected.
- 7) ☒ Claim(s) 15-19 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|--|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input checked="" type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. <u>01212005</u> . |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Response to Amendment

1. Amendments to claims 1, 6 – 8, 10, 14 and 15, cancellation of claims 5 and 9, and addition of claims 20 - 31, filed on November 2, 2004, have been entered in the above-identified application.

The Examiner notes that claims 7 and 8 have the incorrect claim identifier (listed as “original”) and the Examiner has taken these claims as having the claim identifier “currently amended”). Applicants are reminded that subsequent claim listings for claims 7 and 8 should include the identifier “previously presented” absent any claim amendments.

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Examiner's Amendment/Comment

3. The claim identifier for claims 7 and 8 has been changed to “currently amended”.

Request for Continued Examination

4. The Request for Continued Examination (RCE) under 37 CFR 1.53 (d) filed on September 29, 2004 is acceptable and a RCE has been established. An action on the RCE follows.

Claim Objections

5. Claim 14 is objected to because of the following informalities: the phrase “a magnetic recording material *including alternating layers* of an initial paramagnetic Cobalt alloy and a perpendicular recording material having a noble metal” can be read that the recording layer comprises alternating layers of (i) paramagnetic Cobalt alloy and a (ii) perpendicular recording material having a noble metal, which is not enabled by the as-filed disclosure. However, based upon applicants’ as-filed disclosure (esp. claim 15), the Examiner notes that the present claim has been interpreted as reciting: “a magnetic recording material including alternating layers of a Cobalt alloy and a noble metal, wherein the magnetic recording material further comprises an initial paramagnetic material and a final perpendicular recording material” (see claim 15). Appropriate correction is required.
6. Claims 15 – 19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
7. Claim 31 is objected to because of the following informalities: “metal” is misspelled as “meta” on line 3. Appropriate correction is required.

Claim Rejections - 35 USC § 112

8. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

9. Claim 14 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claim 14 recites alternating layers of (i) "an initial paramagnetic Cobalt alloy" and (ii) "a perpendicular recording material having a noble metal", which is not supported by the as-filed disclosure. For purposes of evaluating the prior art, the Examiner has interpreted this claim as reciting "a magnetic recording material including an initial paramagnetic Cobalt alloy material and a perpendicular recording material including alternating layers of a Cobalt alloy and a noble metal".

Claim Rejections - 35 USC § 103

10. Claims 13, 14 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tang et al. (U.S. Patent No. 5,750,270) in view of Suzuki et al. (U.S. Patent No. 5,587,235) and Soeya et al. (U.S. Patent No. 5,726,838).

Regarding claims 13 and 14, Tang et al. disclose a magnetic recording medium having a substrate (*Figure 1, layer 30*) a magnetic layer (i.e. applicants' "interlayer") (*layer 31 and col. 9, lines 9 - 21*), and a layer of magnetic recording material thereon,

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the magnetic recording material comprising a plurality of bilayers having Cobalt or a Cobalt alloy according to claim 11 and a noble metal, such as Pt or Pd (*layers 34 and 35 and col. 9, line 44 bridging col. 10, line 15*).

Tang et al. fail to disclose an initial cobalt alloy paramagnetic layer between the soft magnetic layer and the plurality of bilayers of Cobalt and a noble metal.

However, Suzuki et al. teach that it is known in the art that providing a paramagnetic cobalt alloy intermediate layer between two adjacent magnetic layers, it is possible to reduce the medium noise during recording/reproducing operations (*col. 2, lines 18 - 22; col. 2, line 53 bridging col. 3, line 38; col. 3, line 60 bridging col. 4, line 9*).

It would therefore have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the device of Tang et al. to include a paramagnetic intermediate layer (i.e. applicants' "initial paramagnetic layer") between the two adjacent magnetic layers (*Tang et al., layer 31 and {layers 34/34}_n*) as taught by Suzuki et al. since such a paramagnetic intermediate layer makes it possible to reduce the medium noise during recording/reproducing operations.

Regarding claim 31, the Examiner notes that Suzuki et al. teach using relatively thin paramagnetic intermediate layers (*col. 11, lines 6 – 23 and Table 1 – approximately 5 Å in thickness*), which would result in embodiments meeting the requirement that the cobalt alloy layers of the final recording multilayer are thicker than the cobalt alloy layers of the paramagnetic layer (*Tang et al., col. 9, lines 64 – 67: up 10 Å thick magnetic layers*). Regarding the limitation "there is no magnetic coupling between the neighboring grains of the Cobalt layers of the initial paramagnetic material layer" the

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Examiner deems that the above limitation would necessarily result from the prior art intermediate layer since both layers are paramagnetic materials and such a property is deemed to necessarily flow from a paramagnetic structure.

11. Claims 13 and 14 are rejected under 35 U.S.C. 102(e) as being anticipated by Ikeda et al. (U.S. Patent No. 6,468,670 B1) in view of Suzuki et al. ('235) and Soeya et al. ('838).

Regarding claims 13 and 14, Ikeda et al. disclose a magnetic recording medium having a substrate (*Figure 1, "Substrate"*) a magnetic layer (i.e. applicants' "interlayer") ("*CoCr Granular Layer*" and *col. 2, lines 7 - 15*), and a layer of magnetic recording material thereon, the magnetic recording material comprising a plurality of bilayers having Cobalt or a Cobalt alloy according to claim 11 and a noble metal, such as Pt or Pd ("*Co/Pt Multilayer*"; *col. 3, lines 17 - 20; and col. 5, lines 17 - 20*).

Ikeda et al. fail to disclose an initial cobalt alloy paramagnetic layer between the soft magnetic layer and the plurality of bilayers of Cobalt and a noble metal.

However, Suzuki et al. teach that it is known in the art that providing a cobalt alloy paramagnetic intermediate layer between two adjacent magnetic layers, it is possible to reduce the medium noise during recording/reproducing operations (*col. 2, lines 18 - 22; col. 2, line 53 bridging col. 3, line 38; col. 3, line 60 bridging col. 4, line 9*).

It would therefore have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the device of Ikeda et al. to include a paramagnetic intermediate layer (i.e. applicants' "initial paramagnetic layer") between the two adjacent

magnetic layers (*Ikeda et al.*, "CoCr Granular Layer" and "Co/Pt Multilayer") as taught by Suzuki et al. since such a paramagnetic intermediate layer makes it possible to reduce the medium noise during recording/reproducing operations.

Response to Arguments

12. The prior rejection of claims 1 – 3, 6 – 8, 11 and 12 under 35 U.S.C § 103(a) – Tang et al. in view of various reference

The above noted rejection has been withdrawn because applicant(s) amendment(s) have set forth new limitations (e.g. the thickness of the initial paramagnetic layer) no longer anticipated, nor rendered obvious, by the above noted rejection.

13. The rejection of claims 13, 14 and 31 under 35 U.S.C § 103(a) – Tang et al. in view of various reference

Applicant(s) argue(s) that claim 14 was amended to remove the term "graded" objected to by the Examiner, thereby bringing claim 14 into condition for allowance. The examiner respectfully disagrees.

The Examiner notes that claims 13 and 14 were previously rejected in view of Tang et al. and no amendment or arguments towards the art rejections of record have been presented.

14. The prior rejection of claims 1 – 3, 6 – 8, 11 and 12 under 35 U.S.C § 103(a) – Ikeda et al. in view of various reference

The above noted rejection has been withdrawn because applicant(s) amendment(s) have set forth new limitations (e.g. the thickness of the initial paramagnetic layer) no longer anticipated, nor rendered obvious, by the above noted rejection.

15. The rejection of claims 13 and 14 under 35 U.S.C § 103(a) – Ikeda et al. in view of various reference

Applicant(s) argue(s) that claim 14 was amended to remove the term “graded” objected to by the Examiner, thereby bringing claim 14 into condition for allowance. The examiner respectfully disagrees.

The Examiner notes that claims 13 and 14 were previously rejected in view of Ikeda et al. and no amendment or arguments towards the art rejections of record have been presented.

Allowable Subject Matter

16. The following is a statement of reasons for the indication of allowable subject matter: claims 1 – 3, 6 – 8, 10 – 12 and 20 – 30 recite a thickness of the paramagnetic layer which is neither taught, nor rendered obvious by the prior art of record.

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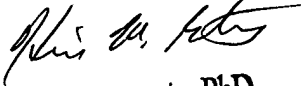
Conclusion

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin M Bernatz whose telephone number is (571) 272-1505. The examiner can normally be reached on M-F, 9:00 AM - 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Deborah Jones can be reached on (571) 272-1535. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KMB
January 21, 2005


Kevin M. Bernatz, PhD
Primary Examiner